Western Technical College

31410332 Framing 2

Course Outcome Summary

Course Information

Description	This course introduces the theory, code requirements, materials, methods, and procedures, required to hand-frame roof systems and construct staircases. Students will construct gable, hip, and intersecting roofs. Students calculate, lay-out, and construct a code-compliant staircase.
Career Cluster	Architecture and Construction
Instructional Level	Technical Diploma Courses
Total Credits	2
Total Hours	72

Textbooks

Carpentry and Building Construction (Student Edition). Copyright 2016. McGraw-Hill Education. Publisher: McGraw-Hill Publishing Company. **ISBN-13:** 978-0-02-140244-1. Required.

Learner Supplies

Scientific Calculator - $20. **Vendor:** Campus Shop. Required.

Program Outcomes

1. Use hand and power tools and equipment.
2. Apply industry recognized safety practices and procedures.
3. Analyze sustainable building practices.
4. Interpret building codes.
5. Demonstrate industry building practices and material application.

Course Competencies

1. Identify roof styles.

Assessment Strategies

1.1. Written Objective Test

Criteria

You will know you are successful when:

1.1. you label the specified roof styles.
1.2. you identify a building's roof style from an architectural drawing.

Learning Objectives

1.a. Identify a gable roof.
1.b. Identify a hip roof.
1.c. Identify a shed roof.
1.d. Identify a mansard roof.
1.e. Identify a gambrel roof.
1.f. Identify a flat roof.

2. Interpret terminology used in roof construction.

Assessment Strategies

2.1. Activity

Criteria

You will know you are successful when:

2.1. you identify the framing members used in a hand framed gable roof.
2.2. you identify the framing members used in a hand framed hip roof.
2.3. you interpret the span, total run, total rise, and slope of a roof.
2.4. you interpret the rafter table found on a framing square.

Learning Objectives

2.a. Identify a roof's span, total run, and total rise.
2.b. Identify the slope of a roof (unit rise).
2.c. Identify a ridge board, common rafters, valley rafters, valley jack rafters, hip rafters, hip jack rafters, and roof sheathing.
2.d. Identify the plumb cut, level cut, bird's mouth, and tail of a rafter.
2.e. Interpret the rafter table on a framing square.

3. Calculate the dimensions of framing members used in a hand-framed gable roof.

Assessment Strategies

3.1. Scenario Response

Criteria

Performance will be satisfactory when:

3.1. you identify the run of a roof.
3.2. you explain the roof slope as inches of rise per foot of run.
3.3. you determine the theoretical and actual length of a ridge board.
3.4. you determine the theoretical and actual length of a common rafter using the rafter table found on the framing square.

Learning Objectives

3.a. Determine the run of a roof and roof slope from an architectural drawing.
3.b. Interpret the rafter table found on a framing square.
3.c. Calculate the length of a ridge board used in a gable roof from an achitectural drawing.
3.d. Calculate the length of a common rafter.

4. Calculate the dimensions of framing members used in a hand-framed hip roof.

Assessment Strategies

4.1. Scenario Response

Criteria

You will know you are successful when:

4.1. you identify the run of the roof.
4.2. you explain the roof slope as inches of rise per foot of run.
4.3. you determine the theoretical and actual length of a hip rafter using the rafter table found on the framing square.
4.4. you determine the theoretical and actual length of multiple hip-jack rafters using the rafter table found on the framing square.

Learning Objectives

4.a. Determine the run of a roof and roof slope from an architectural drawing.
4.b. Interpret the rafter table found on a framing square.
4.c. Calculate the length of a hip rafter.
4.d. Calculate the length of a hip jack rafter.

5. Construct a hand-framed gable roof.

Assessment Strategies

5.1. Activity

Criteria

You will know you are successful when:

5.1. you cut common rafters to their actual length.
5.2. you cut the ridge board to the proper length and support it in the center of the building.
5.3. you fasten common rafters to the ridge board and exterior walls.
5.4. you straighten and level the ridge board to complete the framing of a gable roof.
5.5. you cut the rafter tails to the proper length to ensure the correct roof projection at the eaves.
5.6. you install sub fascia.

Learning Objectives

5.a. Install a ridge board.
5.b. Install common rafters.
5.c. Install sub fascia.

6. Construct a hand-framed hip roof.

Assessment Strategies

6.1. Activity

Criteria

You will know you are successful when:

6.1. you cut the hip rafter to the actual length.
6.2. you "drop" the hip correctly.
6.3. you fasten the hip rafter to the ridge board and exterior walls.
6.4. you cut the hip-jack rafters to their actual lengths.
6.5. you fasten the hip-jack rafters to the hip rafter and exterior walls.
6.6. you straighten the hip to complete the hip roof installation.

Learning Objectives

6.a. Install hip rafters.
6.b. Install hip-jack rafters.

7. Construct an intersecting roof.

Assessment Strategies

7.1. Activity

Criteria

You will know you are successful when:

7.1. you install a ridge board to rest on the intersecting roof
7.2. you align a 24" on-center layout on the ridge board with the lay-out on the intersecting roof
7.3. you measure and cut the valley jack rafters to the proper length with a compound cut on one end to match the slope of the roof.

7.4. you install the valley jack rafters securely, maintaining proper rafter spacing on the intersecting roof.

Learning Objectives

7.a. Install a ridge board on an intersecting roof
7.b. Position a 24" on center lay-out on the double top plate and ridge board for an intersecting roof.
7.c. Install common and valley jack rafters for an intersecting roof.

8. Construct a staircase.

Assessment Strategies

8.1. Skill Demonstration
8.2. Written Objective Test

Criteria

You will know you are successful when

8.1. you identify the framing components of a closed stringer staircase
8.2. you identify the unit rise and run of a staircase in compliance with the uniform dwelling code while maintaining the 17" - 18" rule of thumb
8.3. you build an intermediate landing at the correct height to maintain proper rise and run of the staircase.
8.4. you lay out the unit rise and run and accurately cut the stringers as specified.
8.5. you install the stair stringers maintaining proper unit rise at the landing.
8.6. you fasten the stringers securely to the landing and wall maintaining proper clearance for drywall and skirt boards at the wall.
8.7. you build a knee wall adjacent to the staircase to match the angle of the assembly maintaining proper height to accept a knee wall cap and sufficient length to allow for proper termination of first step tread.

Learning Objectives

8.a. Identify the framing components of a closed stringer staircase.
8.b. Build an intermediate landing.
8.c. Lay out stair stringers that depict proper unit rise and run.
8.d. Cut and install stair stringers.
8.e. Build a knee wall to match the angle of the staircase.